

ANALYTICAL REPORT

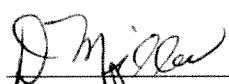
Prepared by
Lockheed Martin Information Systems and Global Services/Environmental Services
Scientific, Engineering, Response and Analytical Services

Paulsboro Train Derailment
Paulsboro, New Jersey

December 2012

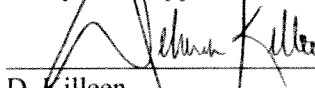
EPA Work Assignment No. SERAS-001
LOCKHEED MARTIN Work Order SER40001
EPA Contract No. EP-W-09-031

Submitted to
S. Burchette
EPA-ERT
2890 Woodbridge Avenue
Edison New Jersey 08837


V. Kansal
Analytical Support Leader

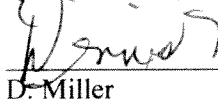
12/13/12
Date

Analysis by:
ERT/SERAS


D. Killeen
QA/QC Officer

12/13/12
Date

Prepared by:
J. Soroka


D. Miller
Program Manager

12/13/12
Date

Validated by:
J. Soroka

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of ERT/SERAS Laboratory

SERAS-001-DAR-121312





Table of Contents

Topic

Testing Laboratories Information
Detailed Sample Information
Introduction
Case Narrative
Summary of Abbreviations

Section I

Results of the Analysis for VOC (ppbv) in Air	Table 1.1a
Results of the Analysis for VOC ($\mu\text{g}/\text{m}^3$) in Air	Table 1.1b

Section II

Results of the LCS Analysis for VOC in Air	Table 2.1
Results of the Duplicate Analysis for VOC in Air	Table 2.2

Section III

Chain of Custody

Appendices

Appendix A Data for VOC in Air	X228
--------------------------------	------

Appendix will be furnished on request.





TESTING LABORATORIES INFORMATION

Analysis of Volatile Organic Compounds in Air, SERAS SOP# 1814, "*Analysis of Volatile Organic Analysis (VOCs) in Air by Gas Chromatography/Mass Spectrometry (GC/MS)*"

ERT/SERAS Laboratory
2890 Woodbridge Avenue
Edison, NJ 08837

All analyses were performed according to our NELAP-approved quality assurance program. The test results meet the requirements of the current NELAP standard, where applicable, except as noted in the laboratory case narrative provided. Results are intended to be considered in their entirety and apply only to those analyzed and reported herein.

ERT/SERAS Laboratory is certified by the New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID # 12023 for VOC analysis in air.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of ERT/SERAS Laboratory

SERAS-001-DAR-121312





Detailed Sample Information

SERAS Sample #

Field Sample #

R212011-01	40001-0022
R212011-02	40001-0023
R212011-03	40001-0024
R212011-04	40001-0025
R212011-05	40001-0026
R212011-06	40001-0027
R212011-07	40001-0028
R212011-08	40001-0029
R212011-09	40001-0030
R212011-10	40001-0031
R212011-11	40001-0032
R212011-12	40001-0033
R212011-13	40001-0034

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of ERT/SERAS Laboratory

SERAS-001-DAR-121312





Introduction

SERAS personnel, in response to WA# SERAS-001, provided analytical support for environmental samples collected from the Paulsboro Train Derailment in Paulsboro, New Jersey as described in the following table. The support also included QA/QC, data review and preparation of an analytical report containing analytical and QA/QC results.

The samples analyzed at SERAS were treated with procedures consistent with those specified in SERAS SOP #1008, *Sample Receiving, Handling and Storage* and SOP #1009, *Operation of Sample Refrigeration Units*.

Chain of Custody #	Number of Samples	Sampling Date	Date Received	Date Analyzed	Matrix	Analysis/ Method	Laboratory	Data Package
02-121112-175446-0003	13	12/12/12	12/12/12	12/12-13/12	Air	VOC/SERAS SOP #1814	ERT/SERAS	X230

Case Narrative

Sampling was conducted as per the site-specific Quality Assurance Project Plan (QAPP) and analyzed by the analytical methods stated in the QAPP. The laboratory reported the data to three significant figures. Any other representation of the data is the responsibility of the user. Data were validated in accordance with the "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use" using a Stage 4 Validation done manually (S4VM). All data validation flags have been inserted into the results tables. At the request of the Work Assignment Manager, the laboratory reported results for vinyl chloride.

VOCs in Soil Package X230

The data package was examined and found to be acceptable.

The results presented in this report only relate to the samples analyzed. All results are intended to be considered in their entirety. The Environmental Response Team/Scientific, Engineering, Response and Analytical Services laboratory is not responsible for utilization of less than the complete report.



Summary of Abbreviations

BFB	Bromofluorobenzene
C	Centigrade
CLP	Contract Laboratory Program
COC	Chain of Custody
conc	concentration
cont	continued
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit
D	(Surrogate Table) value is from a diluted sample and was not calculated
Dioxin	Polychlorinated dibenzo-p-dioxins (PCDD) and Polychlorinated dibenzofurans (PCDF)
DFTPP	Decafluorotriphenylphosphine
EMPC	Estimated maximum possible concentration
GC/MS	Gas Chromatography/ Mass Spectrometry
IS	Internal Standard
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MDA	Minimum Detectable Activity
MS (BS)	Matrix Spike (Blank Spike)
MSD (BSD)	Matrix Spike Duplicate (Blank Spike Duplicate)
MW	Molecular Weight
NA	Not Applicable or Not Available
NAD	Normalized Absolute Difference
NC	Not Calculated
NR	Not Requested/Not Reported
NS	Not Spiked
% D	Percent Difference
% REC	Percent Recovery
SOP	Standard Operating Procedure
ppbv	parts per billion by volume
ppm	parts per million
pptv	parts per trillion by volume
PQL	Practical Quantitation Limit
PAL	Performance Acceptance Limit
QA/QC	Quality Assurance/Quality Control
QL	Quantitation Limit
RL	Reporting Limit
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
SERAS	Scientific, Engineering, Response and Analytical Services
SIM	Selected Ion Monitoring
Sur	Surrogate
TIC	Tentatively Identified Compound
TCLP	Toxicity Characteristic Leaching Procedure
VOC	Volatile Organic Compound
*	Value exceeds the acceptable QC limits

m ³	cubic meter	g	gram	kg	kilogram	L	liter
μg	microgram	μL	microliter	mg	milligram	mL	milliliter
ng	nanogram	pg	picogram	pCi	picocurie	s	sigma

Data Validation Flags

J	Value is estimated	R	Value is unusable
J+	Value is estimated high (metals only)	U	Not detected
J-	Value is estimated low (metals only)	UJ	Not detected and RL is estimated
N	Presumptively present (Aroclors only)		

Rev. 1/14/09





Table 1.1a Result of the Analysis for VOC (ppbv) in Air
WA# SERAS-001, Paulsboro Train Derailment

Page 1 of 1

Method: SERAS SOP#1814

SERAS Sample Number	MethodBlank121212-01		P SystemBlank121212-01		R212011-13		R212011-01		R212011-02	
Sample Number	N/A		N/A		40001-0034		40001-0022		40001-0023	
Sample Location					Trip Blank		Washington		Church	
Sample Sublocation							None		114	
Analyte	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL
	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv
Vinyl Chloride	U	0.0300	U	0.0300	U	0.0300	0.464	0.0300	U	0.105

Table 1.1a (cont) Result of the Analysis for VOC (ppbv) in Air
WA# SERAS-001, Paulsboro Train Derailment

Method: SERAS SOP#1814

SERAS Sample Number	R212011-03		R212011-04		R212011-05		R212011-06		R212011-07	
Sample Number	40001-0024		40001-0025		40001-0026		40001-0027		40001-0028	
Sample Location	On-site House		On-site House (Dup)		Mantua		High School		Police Station	
Sample Sublocation	None		None		79		104		83	
Analyte	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL
	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv
Vinyl Chloride	0.282	0.0300	0.285	0.0300	U	0.0300	U	0.0300	U	0.0300

Table 1.1a (cont) Result of the Analysis for VOC (ppbv) in Air
WA# SERAS-001, Paulsboro Train Derailment

Method: SERAS SOP#1814

SERAS Sample Number	R212011-08		R212011-09		R212011-10		R212011-11		R212011-12	
Sample Number	40001-0029		40001-0030		40001-0031		40001-0032		40001-0033	
Sample Location	Mobile		Library		Jessup		Firehouse		School	
Sample Sublocation	24		98		103		106		105	
Analyte	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL
	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv
Vinyl Chloride	U	0.0300	U	0.0300	U	0.0300	U	0.0300	U	0.0300



Table 1.1b Result of the Analysis for VOC (µg/m3) in Air
WA# SERAS-001, Paulsboro Train Derailment

Page 1 of 1

Method: SERAS SOP#1814

SERAS Sample Number	MethodBlank121212-01		P SystemBlank121212-01		R212011-13 40001-0034		R212011-01 40001-0022		R212011-02 40001-0023	
Sample Number	N/A		N/A		Trip Blank		Washington		Church	
Sample Location	N/A		N/A		Trip Blank		None		114	
Sample Sublocation										
Analyte	Results µg/m3	RL µg/m3	Results µg/m3	RL µg/m3	Results µg/m3	RL µg/m3	Results µg/m3	RL µg/m3	Results µg/m3	RL µg/m3
Vinyl Chloride	U	0.0767	U	0.0767	U	0.0383	1.19	0.0767	U	0.268

Table 1.1b (cont) Result of the Analysis for VOC (µg/m3) in Air

Method: SERAS SOP#1814

SERAS Sample Number	R212011-03 40001-0024		R212011-04 40001-0025		R212011-05 40001-0026		R212011-06 40001-0027		R212011-07 40001-0028	
Sample Number	On-site House		On-site House (Dup)		Mantua		High School		Police Station	
Sample Location	None		None		79		104		83	
Sample Sublocation										
Analyte	Results µg/m3	RL µg/m3	Results µg/m3	RL µg/m3	Results µg/m3	RL µg/m3	Results µg/m3	RL µg/m3	Results µg/m3	RL µg/m3
Vinyl Chloride	0.721	0.0767	0.728	0.0767	U	0.0767	U	0.0767	U	0.0767

Table 1.1b (cont) Result of the Analysis for VOC (µg/m3) in Air
WA# SERAS-001, Paulsboro Train Derailment

Method: SERAS SOP#1814

SERAS Sample Number	R212011-08 40001-0029		R212011-09 40001-0030		R212011-10 40001-0031		R212011-11 40001-0032		R212011-12 40001-0033	
Sample Number	Mobile		Library		Jessup		Firehouse		School	
Sample Location	24		98		103		106		105	
Sample Sublocation										
Analyte	Results µg/m3	RL µg/m3	Results µg/m3	RL µg/m3	Results µg/m3	RL µg/m3	Results µg/m3	RL µg/m3	Results µg/m3	RL µg/m3
Vinyl Chloride	U	0.0767	U	0.0767	U	0.0767	U	0.0767	U	0.0767



Table 2.1 Results of the LCS Analysis for VOC in Air
WA# SERAS-001, Paulsboro Train Derailment

Page 1 of 1

Sample ID: LCS 12/12/12

Analyte	LCS Spike Amount ppbv	LCS Recovered ppbv	% Recovery	QC Limits % Recovery
Vinyl Chloride	1.00	1.05	105	70 - 130

REPORT OF ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of ERT/SERAS Laboratory





Table 2.2 Results of the Duplicate Analysis for VOC in Air
 WA# SERAS-001, Paulsboro Train Derailment

Page 1 of 1

Sample id: 40001-0026

Analyte	Initial Analysis ppbv	Duplicate Analysis ppbv	RPD	QC Limit RPD
Vinyl Chloride	U	U	NC	≤25

Table 2.2 (cont) Results of the Duplicate Analysis for VOC in Air
 WA# SERAS-001, Paulsboro Train Derailment

Sample ID: 40001-00033

Analyte	Initial Analysis ppbv	Duplicate Analysis ppbv	RPD	QC Limit RPD
Vinyl Chloride	U	U	NC	≤25

REPORT OF ANALYSIS

This report shall not be reproduced, except in full,
 without the written consent of ERT/SERAS Laboratory



CHAIN OF CUSTODY RECORD

No: 2-121112-175446-0003

USEPA

Date Shipped: 12/12/2012

Carrier Name:

Airbill No:

Site #: 40001

Contact Name: Amy DuBois

Contact Phone: 609-865-9304

Cooler #:

Lab: ERT/SERAS

Lab Phone: 732-321-4200

SERAS-001-DAR-121312

WO# R212011

Lab #	Site #	Sample #	Location	Sub Location	Analyses	Matrix	Sample Media	Collected	Pump #	OrificeID	Volume	Vol Units
01	40001	40001-0022	Washington	None	TO-15	Air	Summa Canister	12/12/2012	211	014051		Liters
02	40001	40001-0023	Church	114	TO-15	Air	Summa Canister	12/12/2012	246	014044		Liters
03	40001	40001-0024	On site house	None	TO-15	Air	Summa Canister	12/12/2012	126	013983		Liters
04	40001	40001-0025	On site house (Dup)	None	TO-15	Air	Summa Canister	12/12/2012	239	013790		Liters
05	40001	40001-0026	Mantua	79	TO-15	Air	Summa Canister	12/12/2012	178	013956		Liters
06	40001	40001-0027	High School	104	TO-15	Air	Summa Canister	12/12/2012	170	014049		Liters
07	40001	40001-0028	Police Station	100-85	TO-15	Air	Summa Canister	12/12/2012	103	013779		Liters
08	40001	40001-0029	Mobile	24	TO-15	Air	Summa Canister	12/12/2012	54	013939		Liters
09	40001	40001-0030	Library	98	TO-15	Air	Summa Canister	12/12/2012	125	014015		Liters
10	40001	40001-0031	Jessup	103	TO-15	Air	Summa Canister	12/12/2012	14	013774		Liters
11	40001	40001-0032	Firehouse	106	TO-15	Air	Summa Canister	12/12/2012	21	013948		Liters
12	40001	40001-0033	School	105	TO-15	Air	Summa Canister	12/12/2012	145	013921		Liters
13	40001	40001-0034	Trip Blank		TO-15	Air	Summa Canister	12/12/2012	212	014037		Liters

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Special Instructions: Vinyl Chloride via TO-15 Analyses.

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
To Lab	<i>[Signature]</i>	12/12/12	<i>[Signature]</i>	12/12/12	14:41	All/Analyses	<i>[Signature]</i>	12/12/12	<i>[Signature]</i>	12/14/12	15:20